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ARTICLE

After Sendai: Is Africa Bouncing Back or Bouncing Forward from Disasters?

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Abstract The 187 countries that adopted the Sendai Framework for Disaster Risk Reduction 2015–2030 at the March 2015 UN World Conference on Disaster Risk Reduction included most African countries. Many developing regions of the world, particularly in Asia and Latin America, made considerable progress in implementing the previous Hyogo Framework for Action 2005–2015. But, despite the fact that Africa is one of the regions most vulnerable and least resilient to disasters, which continue to be exacerbated by poverty, climate change, rapid urbanization, and structural transformation, it saw only slow progress. This article considers the challenges Africa faces in implementing the Sendai Framework and recommends that besides "Africanizing" Sendai goals and strengthening the region's political commitment to disaster risk reduction (DRR), Africa should also develop a single framework that integrates DRR, sustainable development, climate change adaptation, and conflict prevention. Equally important is the need for a strong recognition that disasters are created endogenously as well as exogenously, and thus require local solutions and local investment.

Keywords Sub-Saharan Africa · Climate change adaptation · Disaster risk reduction · Resilience · Sendai framework · Sustainable development

1 Introduction

Building resilient communities continues to be the watchword of disaster risk reduction (DRR). The Sendai Framework for Disaster Risk Reduction 2015–2030 (SFDRR), adopted by 187 countries in Sendai, Japan, has reinforced the commitment to building disaster resilience. According to the United Nations Office for Disaster Risk Reduction (UNISDR 2015a, p. 3), many disasters are exacerbated by climate change, are increasing in frequency and intensity, and "significantly impede progress towards sustainable development." If the Sendai Framework achieves its goals, by 2030 a much lower risk of disaster will result in fewer lives lost, more livelihoods safeguarded, and healthier communities (UNISDR 2015a). The implementation of the SFDRR will be at four levels: global, national, regional, and local.

This article discusses the implications of the Sendai Framework for Sub-Saharan Africa, based on a literature review and a wide-ranging evaluation of research on DRR in the region. The article first addresses the concept of resilience and examines how the concept is utilized in policy and practice, which may have critical implications for the implementation of the SFDRR. It then discusses the SFDRR's background, highlighting its origins and the challenges of translating it into action. Subsequent sections introduce the hazard, vulnerability, and resilience issues peculiar to Africa and reflect on the integration within DRR of climate change adaptation (CCA), sustainable development, investment, and conflict. The conclusion offers

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recommendations on the implementation of the SFDRR in Sub-Saharan Africa.

2 Resilience and Disaster Risk Reduction

Why, over recent years, has resilience become the key concept in DRR, sustainable development, and climate change adaptation? Resilience is not only a "seductive" concept (Welsh 2014) but also an attractive one normatively, intellectually, and practically. It offers a mechanism for conceptualizing—and deepening and widening our understanding of—the means by which open and complex systems respond to dynamic and unpredictable external variables and, potentially, produce positive outcomes (Manyena and Gordon 2015). Although the definition of resilience has been widely contested, a consensus seems to be emerging, focused on the capacity of an individual, community, country, region, or system to cope positively with rapid-onset shocks or significant and protracted sources of stress arising from natural and anthropogenic hazards (Manyena 2006; Alexander 2013; Matyas and Pelling 2015). This trend is associated with the proactive approach of harnessing the strengths of communities, as distinct from the traditional reactive, top-down approaches to DRR associated with the deficit model of vulnerability, where disaster victims are seen as "helpless" (Manyena 2009, p. 9).

But not all resilience issues have been solved and some seemingly-resolved issues remain unresolved Table 1), particularly those involving a Western framing of the discourse. Despite the post-structural focus on both the context and the local, the terms "disaster," "risk," "hazard," and "vulnerability," which are fundamental to understanding resilience, are in many places unlocal or foreign. In many languages these terms, and resilience itself, have no equivalents and two or more of them can be synonymous. Risk, for instance, first used in seventeenth century Europe, is an abstract and endemically contested concept (Adelswärd and Sachs 1998; Wynne 2002; Schehr 2005; Chan 2009), which has become an instrument for discursively framing public meaning of threats and uncertainty, mainly legitimized through science, technology, and innovation (Wynne 2002). Yet, in DRR it is used generically, implicitly assuming that stakeholders both global and local have a shared meaning of the term. They are similarly assumed to have a shared meaning of disaster, hazard, vulnerability, and resilience. Clearly, a systematic comparison of local and global disaster discourses might both broaden and challenge the epistemological assumptions underpinning disaster research and scholarship.

One crucial unresolved issue identified by Matyas and Pelling (2015) is whether resilience should go beyond the normative notion to include politics, power, and culture. This does not refer to the UK government's Community Resilience Programme, which essentially aims to produce community and to govern its behavior by forming identities and relationships that can be more efficiently managed and directed. The UK government's handing over of responsibility to local volunteers and organizations is less about empowerment than about shifting responsibility from the state to vulnerable communities, who are thus more easily governed (Bulley 2013). This notion of resilience is instrumentalist, an example of Foucault's governmentality (Joseph 2013): the (re)production of responsibilized citizens, who can take care of themselves and also become, or continue to be, unquestioning subjects.

Most definitions of resilience tend to relate to adaptive capacity. Many will agree that this implies making changes to live with a disturbance or which may be thought of as "making friends with the disaster." But these changes are made within the context of a status quo that could have caused disaster in the first place. Because many disasters are sociopolitical constructions, it is not enough to focus solely on adaptive capacity: transformative capacity is also critical. When the system's ecological, social, or economic conditions become untenable or intolerable, new ones must be created (Nelson et al. 2007). This might include addressing the structural causes of a disaster to be found in social fragility, civil conflict, the breakdown of social contracts, corruption, poor governance, and human rights abuses (Manyena and Gordon 2015).

That disasters cause conflict and conflict exacerbates vulnerability to disasters has been recognized in the literature. Political instability and conflict are recognized as being among the underlying causes of disasters, with "war" being one of the "dynamic pressure[s]" on the progression of vulnerability (Wisner et al. 2004, p. 74). In their reflection on the increase in the numbers of disasters over the past 20 years, Cavallo and Noy (2010) argue that if the trend continues, it is likely to jeopardize the stability of developing areas with limited capacities to either finance or organize disaster prevention policies. Similarly, in their study on the effect of armed conflict on vulnerability to natural hazards, Marktanner et al. (2015) found that disaster deaths in conflict zones are on average 40 % higher than in zones not currently suffering from armed conflict. Conversely, Nel and Righarts (2008) demonstrate how civil conflicts significantly increased the risk of violent conflict in developing countries, and recommend that more attention be given to understanding the structural risks posed by cataclysmic events.

If rising disaster trend continues, it is not only likely to destabilize the capacity of countries and communities in DRR activities. It is almost guaranteed to reduce hard-won development gains. It is for these reasons that resilience

Table 1 Resolved and unresolved resilience issues

Resolved issues	Unresolved issues
Vulnerability and resilience are not simply opposites: there is some overlap between them	(1) Whether resilience is a spontaneous or a deliberate process; (2) the complexity or otherwise of the interactions that cause it; (3) whether or not it can be fostered and developed
There has been a gradual shift from an outcome-oriented notion of resilience towards a more process-oriented one	(1) Whether resilience is a normative concept and (2) the extent to which it is implicated in the role of power, politics, and cultural values in limiting adaptive and transformative capacities
Resilience is more than just bounce-back; it is not possible to bounce back to the same position before the disaster as individuals and organizations within structures have changed	Whether resilience as a term should be used to refer to individual components of a system and or to general characteristics of a system itself

Source Matyas and Pelling (2015)

has gained currency in sustainable development, climate change, and humanitarian action. Donors and international organizations, including the European Commission, United States Agency for International Development (USAID), the UK's Department for International Development (DFID), UN agencies, international nongovernmental organizations (NGOs), and the World Bank have progressively embedded resilience in their policies and programs (Matyas and Pelling 2015).

The integration of the disaster narrative with that of development is not new: since the 1970s, disasters have been recognized as indicators of unsolved development problems or failed development, which increase people's vulnerability to natural hazards, including climate-related hazards (O'Keefe et al. 1976; Cuny 1983). Similarly, flawed development processes can increase vulnerability to disasters through the creation and exposure of communities to new risks generated by investment decisions both public and private (O'Keefe et al. 1976; Cuny 1983). Emerging from this narrative is a related argument about integrating DRR and CCA, whose commonalities—both deal with risk reduction resulting from hazards, exposure, and vulnerability—have been recognized by many publications and conferences (Schipper and Pelling 2006; Conway et al. 2011; Kelman 2015). The Intergovernmental Panel on Climate Change (IPCC) (2014), however, while clearly recognizing the relationship between DRR and CCA, tends to view DRR actions as complementary or add-on, rather than as integral, along with CCA, in an overarching framework.

Investment in resilience-building is critically important at both the international and local levels. Putting resources into DRR produces a "triple dividend of resilience" according to the Overseas Development Institute[1] and the World Bank[2] (Tanner et al. 2015, p. 15), particularly if there are strong interlinkages between the finance mechanisms of DRR, sustainable development, and climate change adaptation (Fig. 1). But the shift of international policy from "common but differentiated responsibility" (CBDR) to "mutually agreed terms" (MAT) casts doubt on the "polluter pays" principle of placing more responsibility on developed countries to transfer resources to developing countries. This means developing regions, Africa included, have to mobilize local resources to invest in DRR.

The current drive for resilience is laudable, but, if it translates to an abnegation of political responsibility and the failure to share power and resources (O'Brien and O'Keefe 2013), it may be a recipe for even greater vulnerability and poverty. If governments want their citizens to be resilient, they must give them the means and the tools for "doing" resilience. But even if governments do provide the necessary tools and means, a major challenge might remain: the "fitness for purpose" of the conceptual models and frameworks by which, it is hoped, resilience will be operationalized or put into practice. Interestingly, several models and frameworks have been suggested for operationalizing resilience. These include Cutter et al.'s (2008) Disaster Resilience of Place (DROP) model, Twigg's (2007) Characteristics of Disaster Resilient Communities, Norris et al.'s (2008) Networked Adaptive Capacity model, and Birkmann et al.'s (2013) MOVE (Methods for the Improvement of Vulnerability Assessment in Europe) model (Table 2). Although each of these frameworks has limitations, between them they capture most of the elements contained in the various definitions of resilience: risk drivers (hazard, vulnerability, and exposure), resilience building processes, and outcomes.

Twigg's (2007) Characteristics of Disaster Resilient Communities framework is informed by the five priority actions of the Hyogo Framework for Action 2005–2015 (governance, risk assessment, knowledge and education, risk management and vulnerability reduction, and disaster preparedness and response), which enables a holistic

[1] http://www.odi.org.

[2] http://www.worldbank.org.

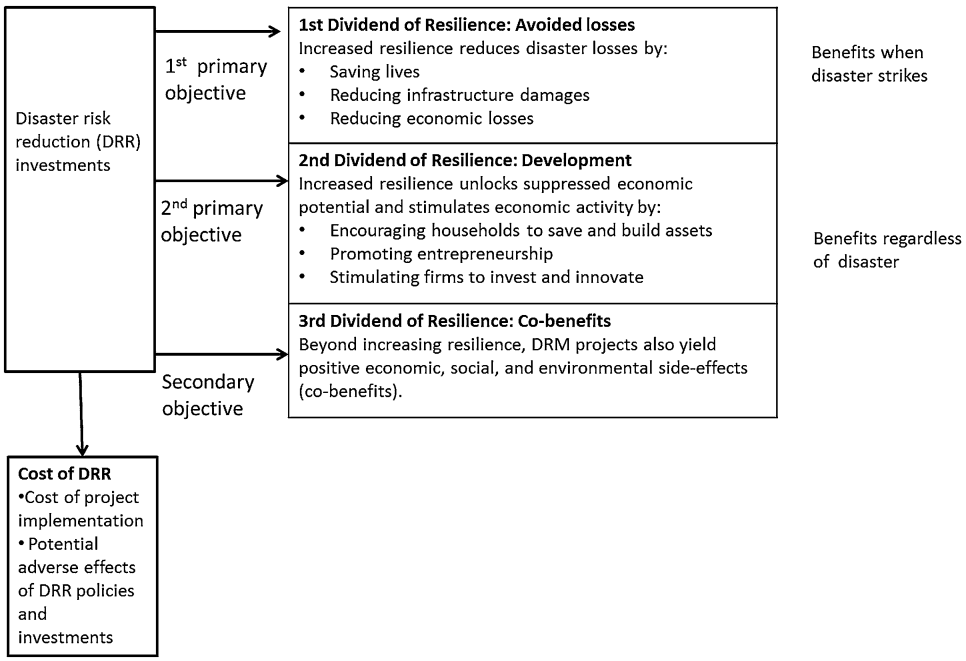

Fig. 1 The triple dividend of resilience. *Source* Adapted from Overseas Development Institute and the World Bank (Tanner et al. 2015, p. 15)

Table 2 Resilience frameworks reviewed for this study

Subject matter	Resilience framework			
	Characteristics of disaster resilient communities	Disaster resilience of place (DROP)	Networked adaptive capacity	MOVE—methods for the improvement of vulnerability assessment in Europe
Discipline	DRR	Social-ecological systems	DRR	DRR
Major concern	Vulnerability and lack of resilience	Vulnerability and lack of resilience	Disaster readiness	Vulnerability, risk, and adaptation
Major elements	Governance; risk assessment; knowledge and education; vulnerability reduction; preparedness and response	Social-ecological systems; economic, institutional, and infrastructure systems; community competence	Economic development; social capital; information and communication; community competence	Multifaceted vulnerability; risk and risk governance; adaptation; feedback loops; system thinking and nonlinearity
Major use	Capacity building, planning, advocacy	Resilience mapping, policy guidance	Capacity development for disaster readiness	Vulnerability assessments to disasters/CCA
Methods	Quantitative and qualitative	Quantitative and qualitative	Quantitative and qualitative	Quantitative and qualitative
Major weakness	Complex to use 167 indicators; weak theoretical basis	Silence on transformative capacity	Response focus; exogenous risk; linearity (no feedback loops)	No details on capacities; unclear about transformation
Author(s)	Twigg (2007)	Cutter et al. (2008)	Norris et al. (2008)	Birkmann et al. (2013)

Source The author

overview of resilient communities. Not only does Twigg's framework appear to be weak on the theory that underpins it, but the large number of indicators (167 for characteristics of a disaster-resilient community and 157 for enabling environments) make it difficult to plan for their application on the ground. In Norris et al.'s (2008) Networked Adaptive Capacity model resilience rests on the 4Rs (rapidity, redundancy, resistance, resourcefulness) that are supported by adaptive capacities comprising four primary sets: economic development, social capital, information and communication, and community competence. There are two problems, however. Not only does the omission of the link between risk drivers—hazard, vulnerability, and exposure—make the model less holistic and therefore less help in understanding resilience, but paying increased attention towards the 4Rs in dealing with "stress and crisis" (Norris et al. 2008, p. 144) suggests the model is in the response mode.

Some of these weaknesses, though, are addressed by Cutter et al.'s (2008) Disaster Resilience of Place (DROP)

model. Presenting resilience as both an inherent, or antecedent, condition and a process of disaster is not new. Nor is the argument that the impact of disasters can be reduced by pre-disaster mitigation and by building capacity for preparedness, coping, and absorption. What might be new is that the rate of recovery becomes a key measure of resilience, determined by the extent to which the absorptive capacity threshold is exceeded by the disaster's impact. However, the silence of the DROP model on transformative capacity limits the utility of the framework for discussions of how to dismantle the status quo that could have caused the disaster in the first place. Birkmann et al.'s (2013) MOVE framework, grounded in vulnerability and resilience thinking, attempts to address most of the weaknesses identified in most of the frameworks. Underpinned by political economy, social ecology, development studies, DRR, and climate change systems science, the framework is a hybrid. Some of the strengths of the MOVE framework are that it is nonlinear, place-specific, and straddles multiple approaches and epistemologies between natural and social sciences and DRR, thus promoting communication across different communities. But like the DROP model, the framework is silent on transformative capacity, a surprising lacuna as the framework draws from critical theory that has a strong focus on social change.

3 The Sendai Framework for Disaster Risk Reduction 2015–2030 (SFDRR)

The Sendai Framework is the culmination of international efforts that can be traced to the 1990–2000 International Decade for Natural Disaster Reduction (IDNDR). Although the IDNDR (Schipper and Pelling 2006) looked at disasters conventionally regarded as "natural"—as acts of God or acts of Nature—there was already compelling evidence that disasters were neither (Wijkman and Timberlake 1984). Disasters were increasingly being described as socially constructed, thus rejecting environmental determinism as the sole element in their causation (O'Keefe et al. 1976; Cuny 1983; Wisner et al. 2004). Similarly, while the mid-term review of IDNDR, held in Yokahama in 1994, recognized the link between disaster and development, it still assumed that disasters were "natural" (Schipper and Pelling 2006, p. 32). This was changed 10 years later, however, by the adoption of the Hyogo Framework for Action 2005–2015 (HFA) by 168 UN member states in Kobe, Japan. The fact that the HFA was agreed upon in the wake of the 2014 Indian Ocean Tsunami helped to push the negotiations onto higher levels, including disaster causation and social construction (Wisner and Walker 2005). The HFA's expected outcome was stated to be "the substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries" (UNISDR 2005, p. 3).

But the actual outcome of the HFA contained contradictions: while disaster mortality decreased over its period, not only did exposure increase faster than vulnerability decreased but also the economic costs continued to rise (Lavell and Maskrey 2014). This suggests that the resources meant for poverty reduction, for example, continued to be diverted to cover the economic losses. This outcome was not surprising, since the HFA "gave only lip service" (Wisner and Walker 2005, p. 90) to some of the fundamental issues visible in 2005. Many of these absent issues—including measurable indicators, clear financing mechanisms, the role of conflict in natural disasters, the superficiality of DRR, the links between climate change adaptation and sustainable development, and the fragmentation and "siloization" of sectors resulting in for example, inefficiencies in leveraging resources and data consistencies—needed to be discussed at the UN World Conference on Disaster Risk Reduction (WCDRR) in Sendai.

The SFDRR's intended outcome was the "substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries" (UNISDR 2015a, p. 6). This outcome will be measured against seven targets, achieved through four priority actions: (1) understanding disaster risk; (2) strengthening disaster risk governance to manage disaster risk; (3) investing in DRR for resilience; and (4) enhancing disaster preparedness for effective response and to facilitate "Build Back Better" in recovery, rehabilitation, and reconstruction (UNISDR 2015a). Although the outcome and priorities for action are not fundamentally different from those of the HFA, the catch-all, densely worded document not only imports the discourses of other disciplines but also incorporates the old and the new discursive framings including a range of phrases—such as "small-scale disasters," "people-centered" DRR, "business resilience," "Build Back Better," and "all-of-society."

Critically, it was recognized that while 2015 was marked by three landmark agreements—the third UN World Conference on Disaster Risk Reduction in March, the Sustainable Development Goals conference in September, and the Climate Change conference in December—efforts to ensure these international agreements are coherent and mutually reinforcing would contribute to multiple benefits at the national and local levels (UNISDR 2014a). It was stated that:

> Climate change adaptation and disaster risk reduction integration form the building blocks for current and future risk prevention, leading to resilience […] this integration needs to be introduced into the delivery of

> basic social services including education, health and water (among others). (UNISDR 2014a, p. 4)

Indeed, the arguments around the inclusion of sustainable development as an overarching framework in which DRR and CCA are subsets have become louder and clearer (Lavell and Maskrey 2014). While the SFDRR endorses the connections between DRR and sustainable development by stating that "disaster risk reduction is essential to achieve sustainable development" (UNISDR 2015a, p. 8), fragmentation continues. From the outset, the 2005 World Conference on Disaster Reduction, where the HFA was adopted, "gave only lip service" to the link between the millennium development goals (MDGs) and DRR and the outcomes generally emphasized hardware and top down rather software and bottom up approaches (Wisner and Walker 2005, p. 90). Similarly, DRR, sustainable development, and climate change adaptation continue to be separate under the SFDRR. This contrasts with UN Secretary General, Ban Ki-moon's opening address in which he said, "sustainability starts in Sendai." A footnote on page 6 of the SFDRR states.

> The climate change issues mentioned in the present [SFDRR] framework remain within the mandate of the United Nations Framework Convention on Climate Change under the competences of the Parties to the Convention. (UNISDR 2015a, p. 5).

While climate change is mentioned in the SFDRR, the mandate to address climate change remains with the United Nations Framework Convention on Climate Change (UNFCC) and not with UNISDR, which, though not ideal for our purposes, is understandable in the context of the enormous political sensitivity of any UN statements on climate change. Similarly, sustainable development is also mentioned, but its operationalization remains with the United Nations Development Programme (UNDP).

The arguments at the third UN WCDRR in support of recognizing conflict as one of the major underlying causes of disasters was loud, noisy, and clear. The erosion of institutions, population displacement, and the loss of livelihoods in ongoing conflicts in Somalia, South Sudan, Democratic Republic of Congo, Nigeria, Niger, and Mali, for example, all exacerbated the disasters that did occur. Interestingly, the 2015 Global Assessment Report on Disaster Risk Reduction (UNISDR 2015b) provides convincing empirical evidence of the role of conflict in the disaster equation.

4 The Hazard, Vulnerability, and Resilience Context of Africa

In the statement from the Fifth Africa Regional Platform and Third Ministerial Meeting for Disaster Risk Reduction that summarizes Africa's contributions to the post-2015 framework for DRR (UNISDR 2014a), the term "resilience" is repeated 15 times, which may suggest that building resilience to disasters is high on the African agenda. Over the past decade there have been attempts in Africa to enhance the resilience of communities to disasters, particularly after the adoption of the Hyogo Framework in 2005. The backdrop to this statement was the widely accepted understanding that disaster risk is a function of the combination of four factors. These are: (1) the hazard—the probability of a hazard event; (2) the exposure—the size of the population and the value of the assets subject to the hazard event; (3) vulnerability—the susceptibility of populations to the hazard event; and (4) resilience—the capacity of communities, or lack of it, to deal with the hazard event (Wisner et al. 2004; Koks et al. 2015). Despite this understanding it remains unclear how these variables interact in creating the conditions for a disaster. But it is understood that urbanization, environmental degradation, climate change, mismanagement of natural resources, conflicts, state failure, and "bad" governance are universally recognized as important drivers of increased disaster vulnerability (Frerks 2010).

For Africa, a region with great potential for economic growth in which GDP is projected to increase from about USD 3 trillion in 2010 to about USD 20 trillion in 2040 (UNECA 2015, p. 5), the SFDRR provides an opportunity not only to address chronic and potential disaster risks, but also to protect development gains. Between 1990 and 2012, Africa experienced an average of 152 disasters per year, the majority of which were triggered by hydrological and climatological hazards (UNISDR 2014b). In 2014, 114 disasters affected over 6.8 million Africans, with approximately USD 6.4 billion in economic losses (CRED 2015). Although the CRED statistics are questionable in that they exclude small-scale disasters, which might well add up to a large proportion of the total, they do help us to understand the scale of the threats posed to lives and livelihoods, and thus the importance of the implementation of the SFDRR. The Fifth Africa Regional Platform and Third Ministerial Meeting for Disaster Risk Reduction (the African DRR Platform), in Abuja, Nigeria in May 2014 (UNISDR 2014a), generated several recommendations for the third UN WCDRR in Sendai, with an emphasis on building disaster resilience.

Africa's hydrological and climatological hazards are mainly associated with shifting patterns in weather and climate, with climate variability being the key challenge. The combination of dryness and extreme rainfall means rainfed agriculture will become an increasingly risky venture, and drought-related food insecurity is likely to be a common, if episodic, feature of life in the future. At the Southern African Development Community (SADC)'s annual Post-Season Review Workshop 2014/15 on DRR in Johannesburg in May 2015, reports were presented on

drought impacts attributed to the combined negative impacts of climate change, poor external aid practices, and—particularly in Zimbabwe and the Democratic Republic of Congo—poor governance. There were strong early indications of food supply shortages, especially maize, in 2015/16. South Africa, which accounts for 40 % of regional maize output, expected a 33 % decline in 2015. Malawi and Mozambique expected a decline as a result of a combination of flooding and dry spells, while Madagascar's rice production was expected to decline due to prolonged waterlogging. Similarly, Zimbabwe experienced widespread crop failure and the loss of about 23 % of its cultivated land due to dry spells. As a result, the subregional maize import requirements were forecast to increase significantly to about 1.76 million tons in 2015/16. In Zimbabwe, maize imports were expected to nearly double, which prompted the Zimbabwean government to lift the 2014 food import ban in anticipation of a tight domestic supply (SADC 2015).

Population displacement and migration, particularly from rural to urban areas are likely to place a strain on urban infrastructure. Intraregional migration has also increased the likelihood of the spread of cholera from countries where it is endemic, such as Malawi, Mozambique, Zambia, and Zimbabwe. Moreover, flood emergencies have become increasingly transboundary: although this study could not obtain comparable data, of the 26 recorded flood emergencies between 2000 and 2012 14 were transboundary (SADC 2015).

Knowledge and understanding of disaster risk is the first priority of the SFDRR, so baseline information from which to benchmark resilience-building efforts and clear targets are vital. The Sendai Framework goals to substantially reduce mortality, the number of affected people, the extent of disaster damage, and so on is likely to lead to confusion and so needs clarification of objectives and monitoring procedures.

The fact that the SFDRR is based on Western framings of the web of meanings around the term "disaster" raises the question: are these Western narratives consistent with the conceptual frameworks of African counterparts. Not only is the concept of risk slippery and sloppy at the best of times (Wynne 2002; Schehr 2005; Chan 2009), but a crucial debate also is missing. This gap is centered on the fact that in many African expressions, and indeed in many world languages and cultures, the term "risk" does not exist. The notion of risk tends to be commonly associated with terms such as "danger" or *ingozi* in Zulu, *njodzi* in Shona, or *jàmbá* in Yoruba. Incorporating indigenous concepts of risk is likely to give a renewed impetus and meaning to the way it is viewed in Africa. Currently, risk has colonial connotations as it tends to be rehearsed in English, in French as *risque*, and in Portuguese as *risco*. Is it time to go back to the drawing board to discursively Africanize risk? There are several examples that demonstrate the benefits of expressing concepts in local language. Gari (2006) demonstrates how, in the late 1960s, Omar Draz, a Syrian Food and Agricultural Organization (FAO) advisor, was able to combine rangeland development, conservation, and management by building upon small-scale protected zones (*hema or hima* in Arabic) as the conceptual basis for a successful grazing cooperative system in Syria. The results were remarkable: the episodic disastrous impact of drought on livestock numbers and offtake was drastically reduced. The system was all based on convincing the Bedouin that all one was talking about was reverting to a traditional concept led by chieftains and *arāfah* (dispute settlers) of the tribes in order to protect and preserve tribal rights and land capability to make it work. This is analogous to the argument about language here, which may point to the practical ways in which the SFDRR could be applied successfully to an African context. This includes working with social structures such as a council of elders and traditional healers who tend to observe and express the behaviors of plants, domestic and wild animals, birds, insects, atmospheric and astronomic phenomena, and wind in their local languages to warn of an impending disaster (Kaya and Koitsiwe 2016). While studies on the integration of science and indigenous knowledge systems in Africa continues to grow (see for example, Chang'a et al. 2010; Egeru 2012; Mavhura et al. 2013; Masinde 2015), there is still a gap in incorporating indigenous knowledge systems, including language expressions in Africa's disaster policies. The first point of call would be to learn more about African linguistic concepts and analogs for danger/disaster, as well as to integrate fundamental indigenous knowledge systems into DRR frameworks.

5 Integration of Disaster Risk Reduction, Climate Change Adaptation, and Sustainable Development in Africa

There are plenty of examples in Africa where a combination of development and climate impacts have generated disasters. Between 1956 and 1958, approximately 57,000 Tonga people were forcibly moved by the Federation of Rhodesia and Nyasaland to arid areas far away from both sides of the Zambezi River to pave the way for the construction of Kariba Dam (Colson 1971). On the Zimbabwean side of the Zambezi River, for example, poverty has notoriously become the badge of the Tonga. Manyena (2013, p. 25) notes the common descriptions of the Tonga by the Zimbabwean media such as "marginalised," "isolated," "poor," "backward," "minority," "primitive," "dangerous," "degraded," and "two-toed people."

Conyers and Cumanzala (2004) attribute the poverty of Zambezi valley Tonga to the consequences of Kariba Dam resettlement of 1950s which are still felt today, mainly due to development neglect by the post-colonial government. They point to the loss of entitlements to floodplain cultivation, fishing, hunting but also limited access to commercial fishing and tourism industries developed along the Kariba lakeshore. Lessing (1993, p. 381) encourages people to visit Kariba Dam, "for there is nothing like it anywhere else in the world," but warns the travellers "not to visit the river Tonga, for they will break your heart." The involuntary displacement narrative has been reinforced by the minority status of the Tonga and associated lack of political power. Manyena (2013) attributes the persistence of poverty to lack of political influence as well as the geopolitical construction of the Zambezi valley, which makes Zambezi valley population vulnerable to multiple disasters that are manifest in the form of food insecurity, frequent waterborne diseases outbreaks, and increased mortality and morbidity rates resulting from HIV and AIDS. In addition to suffering massive property and livelihoods losses, the Tonga people have benefited hardly at all from the dam and, resettled in arid areas, they now depend on humanitarian assistance every year, turning them into development refugees (Weist 1995). The major concern of the project was return to investment, based on conventional economic metrics such as cost-benefit analysis, rather than the associated risks that the project would generate (WCD 2000). Meanwhile climate data indicates a Zambezi River Valley warming of 5 °C and a decreased precipitation of 190 mm per century meaning that the valley will be an agricultural high-risk area by the middle of this century, further threatening the already poverty-stricken and food insecure Tonga population (Magadza 2010). At the same time, low reservoir levels, and a deteriorating dam wall "facing an increased risk of collapse" (Pan et al. 2013, p. 246) that increases the risk of floods all the way downstream into Mozambique and Malawi, bring to the shore the importance of transboundary disaster risk management. The Kariba Dam helps us to see how conceptualizing disasters as development problems shifts attention from viewing risk as only exogenously created towards viewing risk as both exogenously and endogenously generated by development processes.

But integrating DRR, climate change, and sustainable development under the SFDRR also requires the African Union Commission to change its DRR culture. The implementation of the SFDRR in Africa is subject to the Constitutive Act of the African Union (AU 2000), which provides the constitutional basis for all policies, strategies, and programs and all actions of the African Union. Although Article 13(1e) of the Constitutive Act (2000, p. 11) simply cites "environmental protection, humanitarian action and disaster response and relief," it has been (mis)interpreted to include DRR. Interestingly, Article 13(1e) provided the basis for the African Regional Strategy for Disaster Risk Reduction and the Extended Programme for the Implementation of the African Regional Strategy, the African Union Humanitarian Policy and the Policy on Disaster Management, the Africa Policy on Post-Conflict Reconstruction, and related mechanism and structures.

The African Regional Strategy for Disaster Risk Reduction (the Strategy), which is of interest to this article, emerged from the recognition that disaster impacts were an impediment to sustainable development in Africa. In response to this realization, DRR was integrated into all phases of the development and implementation of the Strategy. The objectives of the Strategy were aligned with the HFA's priorities and included increased political commitment to DRR, improved identification and assessment of disaster risks, improved knowledge management for DRR, increased public awareness of DRR, improved governance of DRR institutions, and the integration of DRR with emergency response management. The implementation of the Strategy lies with the African Union Commission, and the Africa Working Group on Disaster Risk Reduction (AWG) is the secretariat. The AWG draws members from the African Union Commission, the Secretariat of the New Partnership for Africa's Development (NEPAD), all Regional Economic Communities (RECs) in Africa and key partners such as the United Nations Development Programme (UNDP), the World Bank Global Fund for Disaster Reduction and Recovery, the African Development Bank, the United Nations International Strategy for Disaster Reduction (UNISDR), and the International Federation of the Red Cross and Red Crescent Societies, as well as representative of higher education institutions and civil society. Having recognized that the African DRR Strategy and Plan of Action were not coordinated with the HFA, the Extended Programme of Action for the Africa Regional Strategy for DRR (2006–2015) (AU and UNISDR 2010) was developed, which incorporated climate change adaptation, DRR, and sustainable development.

The main challenge to implementing these African DRR strategies was the limits to the African Union's institutional capacity. Because the African Union did not have a disaster coordination unit during the operating period of the HFA, the Department of Rural Economy and Agriculture was given the responsibility of implementing the Strategy and coordinating it with the AWG. Since the Department of Rural Economy and Agriculture also had limited capacity, it depended on UNISDR for technical support. In this way, UNISDR became the de facto coordinator of the AWG. Although, like the SFDRR, the HFA placed primary

responsibility for the implementation of its strategy on regional bodies and national governments to lead the DRR processes, including the integration of DRR, sustainable development, and climate change adaptation into a single framework (Schipper and Pelling 2006; Kelman 2015), this does not appear to have happened in Africa. Despite placing both DRR and climate change adaptation under the Department of Rural Economy and Agriculture, creating synergies might still pose a challenge because these departments have separate mandates from the UN system. For Africa to effectively implement the SFDRR, it needs to go beyond revising the African DRR Strategy and establishing an institutional framework and begin to build its own technical capacity using its own resources. These fault lines do not end with the SFDRR: they are even stronger, wider, and deeper at regional and national levels. To build synergies between DRR, CCA, and sustainable development, it might need to start with reforming the UN systems by dismantling the rigid UN mandates that should be scaled down to regional and national levels.

Similarly, the five subregional economic communities (RECs) and national governments will need to reform their institutions to integrate DRR, CCA, and sustainable development into a single framework. A study by the United Nations Economic Commission for Africa (UNECA) on DRR mainstreaming in Africa found that 21 of the 54 countries had disaster reduction policies and 51 out of 54 had a unit, department, or ministry responsible for DRR (UNECA 2015). But the study further found that while the development of DRR policies suggests the existence of the political will to implement DRR, placing DRR in the Civil Protection Department, Ministry of Home Affairs or Interior, or under the President or Prime Minister's Office is reminiscent of a military approach to disaster management, and makes DRR a security rather than a development issue. The military approach adopts a command and control leadership style, rooted in the military model of emergency preparedness and response. The assumption of the command and control model should be understood, according to Dynes (1994), in terms of the 3Cs. The first "C" assumes that disasters are characterized by "chaos" and the other two "Cs" suggest the chaos can be eliminated by command and control. The command and control formulation, although has a longer history, draws heavily on World War II and Cold War attitudes. It recognizes the capacity of military organizations—deeply embedded in disaster management and civil protection organizations—to deal with disasters considering the military is a disciplined force, and has the equipment and stockpile of resources to respond (Dynes 1994). Most of the legal frameworks, consequently, tend to be skewed more towards an emergency preparedness and response mode than one oriented towards sustainable development.

Despite these concerns, Kishore (2011) found, as part of the Mid-Term Review of the HFA, that new DRR legislations, policies, and action plans were rarely harmonized or synchronized with preexisting frameworks in other directly relevant sectors such as water resources, agriculture, power, and energy. Government sector agencies, often themselves nearly hermetically self-contained, were reinforced by the fragmented UN leadership of the three key communities (sustainable development, DRR, and climate change) where UNDP "owns" the SDGs, UNISDR "owns" DRR, while UNFCC "owns" climate change. While the HFA has been one of the key UN strategies since 2005, some United Nations Development Assistance Frameworks (UNDAFs) barely mention DRR, although some agencies have taken measures to include DRR in their country program development. This means DRR advocacy was weak, particularly given that UNDAFs are major instruments for UN advocacy.

There were exceptions from which African countries could draw some lessons. In Mozambique and Malawi DRR has been integrated in national development plans (UNECA 2015). In Ethiopia, the disaster-development linkage was mostly visible through social protection schemes in the form of risk retention and transfer schemes, where relief resources were applied to development processes (Andersson et al. 2011). Ethiopia's Productive Safety Net Programme (PSNP) is a public works program through which food-insecure people are employed in public work for 5 days a month during the January to June agricultural slack season. The wages from the public works enables households to smooth consumption, prevent the depletion of productive assets, and overcome food shortages (Andersson et al. 2011). Although the PSNP has been hailed as a success in enhancing the protection and creation of communal and household assets, there are some challenges. The sustainability of PSNP is questionable as it heavily relies on external resources (for example, from the European Commission, USAID, the UK DFID, World Bank, and the Netherlands). This is compounded by the lack of clear social protection policies, and unclear donor policies on linking relief, rehabilitation, and development, which makes such programs unsustainable and likely to reinforce existing vulnerabilities in the long run.

6 Investing in Disaster Risk Reduction in Africa

The drive to invest in DRR continues to intensify across the globe. In 2013, the Global Assessment Report (GAR13) dedicated itself to DRR investment. Regarding Africa,

GAR13 highlighted the need for investing in DRR. For example.

> In the case of Cape Verde and Senegal, for example, in their capitals Praia and Dakar, flooding has intensified over the years […] underlying drivers of flood risks are poor drainage systems related to land-use and newly built environments, and limited access to land. The studies point to West Africa's continuous problems in expanding urban centres and the need for urban planning and sufficient public or private investments in adequate infrastructure. (UNISDR 2013, p. 69)

Drawing on both studies and experiences, the African DRR Platform recognized the importance of investing in DRR and emphasized that:

> Financial commitment and investment strategies should be developed and national governments should allocate adequate resources for scalable and flexible adaptive basic social services and social protection systems, […to] ensure funding opportunities are available to communities for food security and resilience building. (UNISDR 2014a, p. 6)

Indeed, investing in proactive rather than reactive DRR measures is one of the major emphases of the SFDRR (see Priority 3) (UNISDR 2015a). A public informed about disaster risks and private investments that addresses underlying disaster risk, it is assumed, are "more cost-effective than primary reliance on post-disaster response and recovery, and contributes to sustainable development" (UNISDR 2015a, p. 13). The SFDRR encourages wide-ranging investment, including in risk transfer and insurance, financial protection, critical infrastructure such as schools, hospitals, and physical infrastructures (for example, bridges and roads), people-centered early warning systems, business continuity, and technology and innovation.

Although the tools for the tracking of DRR investment are still underdeveloped, self-assessment reports indicate that the proportion of countries that systematically incorporated DRR into national and sector-level public investment increased from 38 % in 2011–52 % in 2013 (Gordon 2013). The DRR allocations (excluding rehabilitation and reconstruction) by the Indonesian government has seen significantly annual increases with a total of USD 6.4 billion allocated for the period 2006–2012, about 25 times more than total international commitments to DRR in Indonesia in the 30 years from 1980 (Gordon 2013).

But a study by UNECA, which reviewed DRR mainstreaming in Southern African countries, reported that although DRR legislation was often clear on disaster management funding it was generally skewed towards initial response, and investment in DRR was left to the discretion of government sectors (such as agriculture, health, and education) (UNECA 2014). Similarly, at the Southern African Development Community (SADC)'s annual Post-Season Review Workshop 2014/15 on DRR in Johannesburg in May 2015, attended by the present author, the most noticeable progress in funding was towards emergency response (SADC 2015). All member states had some form of national contingency relief fund mechanism. In Botswana, for example, local funds were mobilized for relief materials such as shelter, food, and vaccination (SADC 2015). In response to the 2014/15 drought, Namibia set aside N$ 300 million (approximately USD 30 million) for the sinking and rehabilitation of boreholes, pipeline extension, irrigation of pearl millet, subsidies for maize seed and fertilizer for commercial farmers (SADC 2015), but there are apparently no plans for reducing water demand.

Although most African countries are making efforts in DRR investment, the indigenous financing of DRR is very weak (Kellet and Caravani 2013), with a heavy reliance on external aid, especially in the drought-affected countries of Niger, Eritrea, Zimbabwe, Kenya, and Malawi. In Malawi, of the USD 81million raised in response to the 2014/15 floods, only about USD 1.2 million came from the Malawian government (SADC 2015). Kellet and Caravani's (2013) study *Financing Disaster Risk Reduction: A 20 Year Story of International Aid,* illustrates the insignificance of DRR financing in African countries with a high mortality risk index. This trend is repeated at the global level. Of the USD 3 trillion aid financing during 1991–2010, only 13.5 billion, or 0.4 %, was for risk reduction measures before disasters strike, compared with 23.3 billion spent on reconstruction and rehabilitation and 69.9 billion spent on response (Kellet and Caravani 2013). These financial data should be read with caution—indeed, perhaps none of the figures is especially reliable—as there are no clear mechanisms for tracking the financing of DRR and there is limited understanding of national DRR financing and the interplay between national and international sources (Kellet and Caravani 2013). Nonetheless, on the basis of international (financial) cooperation and technology transfer, which deadlocked the SFDRR negotiations, with the principle of "common but differentiated responsibility" toned down to "mutually agreed terms." This means African countries should increase DRR allocations within their countries and region in order to meet the DRR challenges.

7 Conflict and Disaster Risk Reduction in Africa

Conflict often worsens disaster situations of people in conflict zones. Between 2012 and 2013 the drought that affected at least 13 million people across Ethiopia,

Table 3 Top 10 countries with high risk index values in 2015

Country	Hazard exposure	Vulnerability	Lack of capacity	Risk index	World rank
Somalia	8.6	8.4	9.6	8.8	1
Central African Republic	7.8	8.1	8.6	8.2	2
Afghanistan	8.7	6.9	8.2	7.9	3
South Sudan	7.0	7.7	8.9	7.8	4
Sudan	7.3	7.2	7.3	7.2	5
Yemen	7.9	5.6	8.2	7.2	6
Iraq	8.2	6.0	7.0	7.0	7
Congo DR	5.4	7.6	8.3	7.0	8
Chad	4.6	7.8	8.9	6.8	9
Myanmar	8.2	5.4	7.0	6.8	10

Note: The indices are measured from 0 to 10 with 0 being the lowest score and 10 the highest score

Source INFORM (2015)

Somalia, and northern Kenya was exacerbated by armed conflict (UNISDR 2015b). According to the INFORM (2015) database, four of the top five countries in terms of disaster risk exposure and vulnerability were in Africa (Table 3); all of them were in conflict or post-conflict situations.

Interestingly, at the 2015 third UN WCDRR, the term "conflict" was excluded from the SFDRR (UNISDR 2015a). Perhaps the assumption here is that DRR is primarily targeted at stable and well-functioning governments, and elsewhere DRR should not be of concern. But should DRR wait for the conflict to end, even though we know that some conflicts, for example in Somalia, have continued for two and half decades?

Although risk rankings such as those contained in Table 3 may be a subject of debate, they do not diminish the significance of Africa's responsibility in exacerbating conflict, which warrants inclusion in their DRR programs. While the SFDRR excludes conflict in its conceptualization of disasters, it is incumbent upon African countries, through the Constitutive Act of the African Union, to decisively include conflict in its DRR strategic framework. The basis for the integration of conflict with DRR is provided by the fact that humanitarian action and disaster management, though reactive in nature, is one of the mandates of the African Union's Peace and Security Department, which also deals with conflict, although it is separate from the Rural and Agriculture Department. Furthermore, the Peace and Security Protocol of 2002 (AU 2002), which derives from the Constitutive Act of the African Union, provides for the Continental Early Warning System for conflict prevention (AU 2000) and could be integrated with the early warning systems for DRR, including Famine Early Warning Systems. The challenge for the African Union is not only the difficulties in the conceptualization of "integration," which tends to be used interchangeably with "mainstreaming," but also the availability of tools that can support integration.

8 Conclusion

As for most parts of the world, the SFDRR offers an opportunity for Africa to enhance its resilience to disasters. Africa should embrace this opportunity. This means the African Commission should advocate for increased political commitment to DRR, including its being explicitly embedded in political manifestos. On conceptual issues, African countries need to invest in research to develop an enhanced understanding on the concepts involved in "disaster," including also the meanings and constitutive elements of terminologies such as risk, vulnerability, and resilience that are consistent with African languages, traditions, and cultures. The "Africanization" of disaster risk will not only increase local understandings of the endogenous and exogenous constitutive elements of disasters; it also has the potential both to inform the global DRR architecture and to challenge the ontological and epistemological assumptions that underpin knowledge of disaster worldwide.

Consistent with disaster research and scholarship, Africa needs to develop a clear roadmap that integrates DRR, sustainable development, climate change adaptation, and conflict such that DRR wherever possible conducts a continuous conversation directly with health, education, investment, absolute poverty reduction, social protection, environmental sustainability, and conflict prevention.

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